

CLAIMS

1. A polyacetal resin composition which comprises a polyacetal resin and at least one stabilizer selected 5 from the group consisting of an antioxidant, a formaldehyde emission inhibitor, a processing stabilizer, and a heat stabilizer, wherein the trioxane content in the polyacetal resin is not more than 100 ppm.
2. A polyacetal resin composition according to 10 claim 1, wherein the trioxane content is not more than 50 ppm.
3. A polyacetal resin composition according to claim 1, wherein the trioxane content is not more than 10 15 ppm.
4. A polyacetal resin composition according to claim 1, wherein the polyacetal resin comprises a polyacetal resin in which the trioxane content is reduced by a solvent treatment and/or a heat treatment.
5. A polyacetal resin composition according to 20 claim 4, wherein the polyacetal resin comprises a polyacetal resin in which the trioxane content is reduced by at least one treatment selected from the group consisting of a solvent treatment with a poor solvent for the polyacetal resin, and the heat treatment.
6. A polyacetal resin composition according to 25 claim 5, wherein the solvent treatment is conducted with a solvent being a poor solvent for the polyacetal resin

and being a good solvent for trioxane.

7. A polyacetal resin composition according to claim 4, wherein the heat treatment include at least one heat treatment selected from the group consisting of an 5 airflow heat treatment, an inactive gas flow heat treatment, a heated vapor treatment, and a vacuum heat treatment.

8. A polyacetal resin composition according to claim 4, wherein the polyacetal resin comprises a polyacetal copolymer in which the trioxane content is reduced by a 10 treatment with an aqueous medium or an alcohol-containing aqueous medium under heating of not lower than 80°C.

9. A polyacetal resin composition according to claim 4, wherein the polyacetal resin comprises a polyacetal copolymer in which the trioxane content is reduced by a 15 treatment with a basic aqueous medium under heating of not lower than 80°C.

10. A polyacetal resin composition according to claim 1, wherein the polyacetal resin comprises a polyacetal copolymer having a terminal hemiformal group of not more 20 than 1.2 mmol/kg, and a terminal formyl group of not more than 1.2 mmol/kg.

11. A polyacetal resin composition according to claim 1, wherein the polyacetal resin comprises a polyacetal copolymer having an unstable terminal group of not more 25 than 0.5% by weight.

12. A polyacetal resin composition according to claim 1, wherein the antioxidant comprises at least one

member selected from the group consisting of a hindered phenol compound and a hindered amine compound.

13. A polyacetal resin composition according to  
claim 1, wherein the formaldehyde emission inhibitor  
5 comprises at least one compound having an active hydrogen atom and selected from the group consisting of a basic nitrogen-containing compound, an active methylene compound, and a polyphenol compound.

14. A polyacetal resin composition according to  
10 claim 1, wherein the formaldehyde emission inhibitor comprises at least one basic nitrogen-containing compound selected from the group consisting of an aminotriazine compound, a guanidine compound, a urea compound, a hydrazine compound, an amino acid compound, an amino alcohol compound, 15 an imide compound, an imidazole compound, and an amide compound.

15. A polyacetal resin composition according to  
claim 1, wherein the formaldehyde emission inhibitor  
comprises at least one basic nitrogen-containing compound  
20 selected from the group consisting of a melamine compound, a guanamine compound, a creatinine compound, a biurea compound, a cyclic urea compound, a carboxylic acid hydrazide compound, and a polyamide compound.

16. A polyacetal resin composition according to  
25 claim 1, wherein the processing stabilizer comprises at least one member selected from the group consisting of a higher fatty acid or a derivative thereof, a polyoxyalkylene

glycol, and a silicone compound.

17. A polyacetal resin composition according to claim 1, wherein the heat stabilizer comprises at least one member selected from the group consisting of an organic 5 carboxylic acid or a metal salt thereof, an alkaline or alkaline earth metal compound, a phosphine compound, a hydrotalcite, and a zeolite.

18. A polyacetal resin composition according to claim 1, which comprises

10 a polyacetal copolymer having a trioxane content of not more than 100 ppm,  
an antioxidant,  
a formaldehyde emission inhibitor,  
a processing stabilizer, and  
15 a heat stabilizer,

wherein, relative to 100 parts by weight of the polyacetal copolymer, the proportion of the antioxidant is 0.005 to 3 parts by weight, the proportion of the formaldehyde emission inhibitor is 0.001 to 20 parts by 20 weight, the proportion of the processing stabilizer is 0.01 to 5 parts by weight, and the proportion of the heat stabilizer is 0.001 to 5 parts by weight.

19. A polyacetal resin composition according to claim 1, which further comprises at least one additive 25 selected from the group consisting of a weather (light)-resistant stabilizer, an impact resistance improver, a gloss control agent, an agent for improving

sliding property, a coloring agent, and a filler.

20. A polyacetal resin composition according to claim 19, wherein the weather (light)-resistant stabilizer comprises at least one member selected from the group 5 consisting of a benzotriazole compound, a benzophenone compound, an aromatic benzoate compound, a cyanoacrylate compound, an oxalic anilide compound, a hydroxyphenyl-1,3,5-triazine compound, and a hindered amine compound.

10 21. A polyacetal resin composition according to claim 19, wherein the impact resistance improver comprises at least one member selected from the group consisting of a thermoplastic polyester, a thermoplastic polyurethane, an acrylic core-shell polymer, and a styrenic elastomer.

15 22. A polyacetal resin composition according to claim 19, wherein the gloss control agent comprises at least one member selected from the group consisting of an acrylic resin and a styrenic resin.

20 23. A polyacetal resin composition according to claim 19, wherein the agent for improving sliding property comprises at least one member selected from the group consisting of an olefinic polymer, a silicone-series resin, and a fluorine-containing resin.

25 24. A polyacetal resin composition according to claim 1, which comprises a pellet of a polyacetal copolymer having a trioxane content of not more than 100 ppm at least coexistent with a formaldehyde emission inhibitor or a

master batch containing a formaldehyde emission inhibitor.

25. A process for producing a polyacetal resin composition, which comprises melt-mixing a polyacetal resin recited in claim 1 and at least a formaldehyde emission 5 inhibitor with an extruder having an exhaust port, wherein in the melt-mixing process, at least one processing auxiliary selected from the group consisting of water and an alcohol is added to the mixture, and a volatile component is exhausted through the exhaust port.

10 26. A process for producing a polyacetal resin composition, which comprises mixing a polyacetal resin recited in claim 1 and at least one stabilizer selected from the group consisting of an antioxidant, a formaldehyde emission inhibitor, a processing stabilizer, and a heat 15 stabilizer, wherein at least the formaldehyde emission inhibitor is fed through a side feed port of an extruder.

27. A process for producing a polyacetal resin composition, which comprises melt-mixing a polyacetal resin recited in claim 1 and a formaldehyde emission inhibitor 20 with an extruder, wherein the average residence time of melt-mixing is not longer than 300 seconds.

28. A process for producing a polyacetal resin composition, which comprises melt-mixing a polyacetal copolymer recited in claim 1 and at least one stabilizer 25 selected from the group consisting of an antioxidant, a formaldehyde emission inhibitor, a processing stabilizer and a heat stabilizer with an extruder, and extruding the

mixture to prepare a pelletized composition, and further subjecting the pelletized composition to a solvent treatment and/or a heat treatment to obtain the polyacetal resin composition.

5           29. A molded product which comprises a polyacetal resin composition recited in claim 1.

          30. A molded product according to claim 29, wherein the amount of trioxane elution extracted from the molded product with distilled water by heating under reflux for 10 2 hours is not more than 10 mg per 1 kg of the molded product.

          31. A molded product according to claim 29, wherein the amount of trioxane elution extracted from the molded product with distilled water by heating under reflux for 2 hours is not more than 5 mg per 1 kg of the molded product.

15           32. A molded product according to claim 29, wherein the amount of trioxane elution extracted from the molded product with distilled water by heating under reflux for 2 hours is not more than 1 mg per 1 kg of the molded product.

          33. A molded product according to claim 29, wherein 20 (1) when the molded product is stored in a closed space for 24 hours at a temperature of 80°C, the emission of formaldehyde therefrom is not more than 1.0  $\mu\text{g}$  per 1  $\text{cm}^2$  of the surface area of the product, and/or (2) when the molded product is stored in a closed space for 3 hours at 25 a temperature of 60°C under a saturated humidity, the emission of formaldehyde therefrom is not more than 1.2  $\mu\text{g}$  per 1  $\text{cm}^2$  of the surface area of the product.

34. A molded product according to claim 29, wherein the amount of a volatile organic compound generated under heating at a temperature of 120°C for 5 hours is, in terms of acetone, not more than 15 µg per 1 g of the molded product.

5 35. A molded product according to claim 29, wherein the amount of a volatile organic compound generated under heating at a temperature of 120°C for 5 hours is, in terms of acetone, not more than 10 µg per 1 g of the molded product.

10 36. A molded product according to claim 29, wherein the amount of a volatile organic compound generated under heating at a temperature of 120°C for 5 hours is, in terms of acetone, not more than 5 µg per 1 g of the molded product.

15 37. A molded product according to claim 29, which is at least one member selected from the group consisting of a food grade part, an automotive part, an electric or electronic device part, an architectural or pipeline part, a household utensil or cosmetic article part, a medical device part, and a photographic part.